



PATENT APPLICATION

**CERTIFICATE OF MAILING/FACSIMILE TRANSMISSION (37 CFR 1.8)**

I hereby certify that this paper (along with any paper referred to as being transmitted therewith) is (XXX) being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box. 1450, Alexandria, Virginia 22313-1450 **OR** ( ) being transmitted by facsimile to the U.S. Patent and Trademark Office. (Fax No. 703-XXX-XXXX) [Group XXXX] (\_\_\_\_\_ pages). This facsimile is being sent from (908) 429-3650.

Maria T. Sanchez  
(Print Name)

Date: November 7, 2005

Maria T. Sanchez  
(Signature)

Docket No. 2002US304

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application

Mark O. NEISSER et al.

Art Unit: 1756

Serial No. 10/042,878, filed January 9, 2002

Examiner: BARRECA, Nicole M.

For: PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM  
ANTIREFLECTIVE COATING

**INFORMATION DISCLOSURE STATEMENT BEFORE MAILING OF THE FIRST  
OFFICE ACTION (37 CFR 1.97 (b))**

November 7, 2005

Mail Stop RCE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Serial No. 10/042,878  
Filed: January 9, 2002

Dear Sir:

1. IDENTIFICATION OF TIME OF FILING INFORMATION DISCLOSURE  
STATEMENT

The information disclosure statement submitted herewith is being filed before the mailing date of a first Office action on the merits and is being filed in conjunction with a Request for Continued Examination (RCE) filed under separate cover. 37 CFR 1.97(b) and MPEP 609.

2. PRELIMINARY STATEMENTS

Applicants submit herewith patents, publications or other information of which they are aware, which they believe may be material to the examination of this application and in respect of which there may be a duty to disclose.

The filing of this information disclosure statement shall not be construed as a representation that a search has been made (37 CFR 1.97(g)), an admission that the information cited is, or is considered to be, material to patentability or that no other material information exists.

The filing of this information disclosure statement shall not be construed as an admission against interest in any manner. Notice of January 9, 1992, 1135 O.G. 13-25, at 25.

This application entered the national stage after June 30, 2003. As provided for in the 5 August 2003 notice Official Gazette, the Patent Office had waived the requirement under 37 C.F.R. § 1.98(a)(2)(i) for submitting a copy of each cited U.S. Patent in this Information Disclosure Statement.

3. COMPLETED FORM PTO-1449 IS ATTACHED.

4. COPIES OF LISTED INFORMATION ITEMS ACCOMPANYING THIS  
STATEMENT

Legible copies of all items listed accompany this information statement:



## PATENT APPLICATION

US 4,491,628	US 6,319,651
US 4,521,274	US 6,322,948
US 5,069,997	US 6,329,117
US 5,350,660	US 2003/0104322
US 5,354,643	US 2003/0129531
US 5,389,491	US 2003/0215736
US 5,419,991	US 2004/0013971
US 5,581,730	US 5,286,867
US 5,585,219	US 5,338,641
US 5,692,691	US 5,340,682
US 5,716,756	JP 5-107770
US 5,731,386	JP 7-159997
US 5,763,135	JP 7-181687
US 5,763,954	JP 8-286384
US 5,795,701	JP 9-205057
US 5,871,730	JP 10-301268
US 5,851,738	DE 39 30 086
US 5,880,169	DE 39 30 087
US 5,882,996	DE 41 12 967
US 5,886,102	EP 0 583 205
US 5,928,837	EP 0 794 458
US 5,935,760	EP 0 905 565
US 5,994,006	GB 2 320 718
US 6,110,641	GB 2 354 763
US 6,110,653	WO 97/33198
US 6,319,165	JP 2000-171604

Bather et al., "Titanium Nitride Oxide (TiN<sub>x</sub>O<sub>y</sub>) as a Barrier Between Chromium-Silicon-Oxygen (Cr-Si-(O)) and Aluminium Thin Films", Thin Solid Films Vol. 200, pages 93 – 116 (1991).

Cho et al., "Negative tone 193 nm resists", SPIE Vol. 3999, pages 62 – 73 (2000).

Choi et al., "Design and Synthesis of New Photoresist Materials for ArF Lithography", SPIE Vol. 3999, pages 54 – 61 (2000).

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Choi et al., "Improved Lithographic Performance of 193nm-Photoresists Based on Cycloolefin / Maleic Anhydride Copolymer by Employing Mixed PAGs", SPIE Vol. 4345, pages 94 – 105 (2001).

Czech et al., "Reduction of Linewidth Variation for the Gate Conductor Level by Lithography Based on a New Antireflective Layer", Microelectronic Engineering Vol. 21, pages 51 – 56 (1993).

Fu et al., "Negative-tone Cycloolefin Photoresist for 193 nm Lithography", SPIE Vol. 4345, pages 751 – 760 (2001).

Houlihan et al., "Chemically Amplified Resists: The Chemistry and Lithographic Characteristics of Nitrobenzyl Benzenesulfonate Derivatives", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 259 – 273 (1990).

Ito, "Chemically Amplified Resists: Past, Present, and Future", SPIE Vol. 3678, pages 2 – 12 (March 1999).

Iwasa et al., "Novel negative photoresist based on polar alicyclic polymers for ArF excimer laser lithography", SPIE Vol. 3333, pages 417 – 424 ( ).

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Richter et al., "Negative Tone Resist for Phase-Shifting Mask Technology: A Progress Report", SPIE Vo. 3999, pages 91 – 101 (2000).

Rushkin et al., "New Polymers for 193 nm Single Layer Resists Based on Substituted Cycloolefins/Maleic Anhydride Resins", SPIE Vol. 3678, pages 44 – 50 (March 1999).

Schlegel et al., "Studies on the Acid Formation and Deprotection Reaction by Sover Sulfonates in a Chemical Positive Photoresist", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 281 – 287 (1990).

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Shida et al., "193-nm Single Layer Resists Based on Advanced Materials", SPIE Vol. 4345, pages 87 – 93 (2001).

Shirai et al., "Photochemistry of Imino Sulfonate Compounds and Their Application to Chemically Amplified Resists", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 301 – 304 (1990).

Yamaoka et al., "Photochemical Dissociation of p-Nitrobenzyl Aromatic Sulfonate and Its Application to Chemical Amplification Resists", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 275 – 280 (1990).

Yokoyama et al., "ArF Negative Resist System Using Androsterone Structure with 6-Hydroxy Acid for 100-nm Phase-Shifting Lithography", SPIE Vol. 4345, pages 58 – 66 (2001).

Yokoyama et al., "Effect of Comonomer Structure on Dissolution Characteristics: ArF Negative Resist System Using Androsterone Derivative with 6-Hydroxy Acid", Journal of Photopolymer Science and Technology Vol. 14, No. 3, pages 393 – 400 (2001).

[ ] Exception(s) to above:

5. TRANSLATION(S) OF NON-ENGLISH LANGUAGE DOCUMENTS

[X] Submitted herewith is an English translation of the following foreign language patents, publications or information or of those portions of those patents, publications or information considered to be material:

English Language Translation of JP 5-107770  
English Language Translation of JP 7-159997  
English Language Translation of JP 7-181687  
English Language Translation of JP 8-286384  
English Language Translation of JP 9-205057  
English Language abstract of JP 2000-171604

Copy of Official Action (and English translation thereof) for JP Application No. Hei-10-186575.

Serial No. 10/042,878  
Filed: January 9, 2002

[ X ] The following English language documents identified below are believed to be the equivalent or substantial equivalent of the foreign language documents identified below, which are also submitted herewith, except where noted.

US 5,286,867 is the English language equivalent of DE 41 12 967 A1.  
US 5,338,641 is the English language equivalent of DE 39 30 086 A1.  
US 5,340,682 is the English language equivalent of DE 39 30 087 A1.

[ ] No English language translations of the foreign language patents, publications or information or parts thereof are readily available, except those listed above.

6. IDENTIFICATION OF PERSON(S) MAKING THIS INFORMATION DISCLOSURE STATEMENT

The person making this statement is the attorney who signs below on the basis of the information in the attorney's file.

This Information Disclosure Statement is filed under 37 CFR §1.97(b) before the latter of three months after the United States patent application filing date or the first Office Action on the merits. Accordingly, no fee or §1.97(e) Statement is required.

Respectfully submitted,



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Customer No. 26,289

**CERTIFICATE OF MAILING BY FIRST CLASS MAIL (37 CFR 1.8)**Applicant(s): **Mark O. NEISSER et al.**

Docket No.

**2002US304**

Serial No.

**10/047,878**

Filing Date

**Janaury 9, 2002**

Examiner

**BARRECA, Nicole M.**

Group Art Unit

**1756**

Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**

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**November 7, 2005***(Date)***MARIA T. SANCHEZ***(Typed or Printed Name of Person Mailing Correspondence)**(Signature of Person Mailing Correspondence)***Note: Each paper must have its own certificate of mailing.**

# INFORMATION DISCLOSURE CITATION

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1756

## U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4,491,628	1/1/1985	Ito et al.			
	4,521,274	6/4/1985	Reichmanis et al.			
	5,069,997	5/16/1989	Schwalm et al.			
	5,350,660	9/27/1994	Urano et al.			
	5,354,643	10/11/1994	Cabrera et al.			
	5,389,491	2/14/1995	Tani et al.			
	5,419,991	5/30/1995	Segawa			
	5,581,730	12/3/1996	Silla			
	5,585,219	12/17/1996	Kaimoto et al.			
	5,693,691	12/2/1997	Flaim et al.			
	5,716,756	2/10/1998	Pawlowski et al.			

## FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	JP 5-107770	4/30/1993	JAPAN			✓	
	JP 7-159997	6/23/1995	JAPAN			✓	
	JP 7-181687	7/21/1995	JAPAN			✓	
	JP 8-286384	11/1/1996	JAPAN			✓	
	JP 9-205057	8/5/1997	JAPAN			✓	

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)


EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



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	5,731,386	3/24/1998	Thackeray et al.			
	5,763,135	6/9/1998	Ding et al.			
	5,763,954	6/9/1998	Hyakutake			
	5,795,701	8/18/1998	Conley et al.			
	5,871,730	12/22/1998	Thackeray et al.			
	5,851,738	12/22/1998	Thackeray et al.			
	5,880,169	3/9/1999	Osawa et al.			
	5,882,996	3/16/1999	Dai			
	5,886,102	3/23/1999	Sinta et al.			
	5,928,837	7/27/1999	Sato et al.			
	5,935,760	8/10/1999	Shao et al.			

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						YES	NO
	JP 10-301268	11/13/1998	JAPAN				
	DE 39 30 086	3/21/1991	GERMANY				
	DE 39 30 087	3/14/1991	GERMANY				
	DE 41 12 967	10/22/1992	GERMANY				
	EP 0 583 205	2/16/1994	EUROPE				

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	5,994,006	11/30/1999	Nishi			
	6,110,641	8/29/2000	Trefonas, III et al.			
	6,110,653	8/29/2000	Holmes et al.			
	6,316,165	11/13/2001	Pavelchek et al.			
	6,319,651	11/20/2001	Holmes et al.			
	6,322,948	11/27/2001	Jung et al.			
	6,329,117	12/11/2001	Padmanaban et al.			
	2003/0104322	6/5/2003	Yamashita et al.			
	2003/0129531	7/10/2003	Oberlander et al.			
	2003/0215736	11/20/2003	Oberlander et al.			
	2004/0013971	1/22/2004	Berger et al.			

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	EP 0 794 458	9/10/1997	EUROPE				
	EP 0 905 565	3/31/1999	EUROPE				
	GB 2 320 718	7/1/1998	UNITED KINGDOM				
	GB 2 354 763	4/4/2001	UNITED KINGDOM				
	WO 97/33198	9/12/1997	WIPO				

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	5,338,641	8/16/1994	Pawlowski et al.			
	5,340,682	8/23/1994	Pawlowski et al.			

## FOREIGN PATENT DOCUMENTS

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						YES	NO
	JP 2000-171604	6/23/2000	JAPAN				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

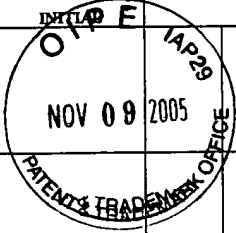

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<b>INFORMATION DISCLOSURE CITATION</b> <i>(Use several sheets if necessary)</i>		Docket Number (Optional) <b>2004US304</b>	Application Number <b>10/042,878</b>
		Applicant(s) <b>Mark O. NEISSER et al.</b>	
		Filing Date <b>January 9, 2002</b>	Group Art Unit <b>1756</b>

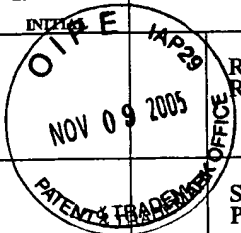
  

*EXAMINER	OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>	
		Bather et al., "Titanium Nitride Oxide (TiN <sub>x</sub> O <sub>y</sub> ) as a Barrier Between Chromium-Silicon-Oxygen (Cr-Si-(O)) and Aluminium Thin Films", Thin Solid Films Vol. 200, pages 93 - 116 (1991).
		Cho et al., "Negative tone 193 nm resists", SPIE Vol. 3999, pages 62 - 73 (2000).
		Choi et al., "Design and Synthesis of New Photoresist Materials for ArF Lithography", SPIE Vol. 3999, pages 54 - 61 (2000).
		Choi et al., "Improved Lithographic Performance of 193nm-Photoresists Based on Cycloolefin / Maleic Anhydride Copolymer by Employing Mixed PAGs", SPIE Vol. 4345, pages 94 - 105 (2001).
		Czech et al., "Reduction of Linewidth Variation for the Gate Conductor Level by Lithography Based on a New Antireflective Layer", Microelectronic Engineering Vol. 21, pages 51 - 56 (1993).
		Fu et al., "Negative-tone Cycloolefin Photoresist for 193 nm Lithography", SPIE Vol. 4345, pages 751 - 760 (2001).
		Houlihan et al., "Chemically Amplified Resists: The Chemistry and Lithographic Characteristics of Nitrobenzyl Benzenesulfonate Derivatives", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 259 - 273 (1990).
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		Iwasa et al., "Novel negative photoresist based on polar alicyclic polymers for ArF excimer laser lithography", SPIE Vol. 3333, pages 417 - 424 ( ).
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		Copy of Official Action (and English translation thereof) for JP Application No. Hei-10-186575.
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**CERTIFICATE OF MAILING BY FIRST CLASS MAIL (37 CFR 1.8)**Applicant(s): **Mark O. NEISSER et al.**

Docket No.

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Serial No.

**10/047,878**

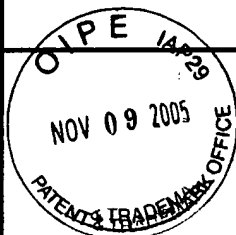
Filing Date

**Janaury 9, 2002**

Examiner


**BARRECA, Nicole M.**

Group Art Unit

**1756**Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**I hereby certify that this **DE 39 30 086 A1 - 10 Pages***(Identify type of correspondence)*

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Commissioner of Patents and Trademarks, Washington, D.C. 20231-0001 on

**November 7, 2005***(Date)***MARIA T. SANCHEZ***(Typed or Printed Name of Person Mailing Correspondence)*  
*(Signature of Person Mailing Correspondence)***Note: Each paper must have its own certificate of mailing.**

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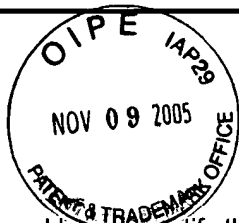
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**BARRECA, Nicole M.**

Group Art Unit

**1756**Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**I hereby certify that this **DE 39 30 087 A1 - 10 Pages***(Identify type of correspondence)*

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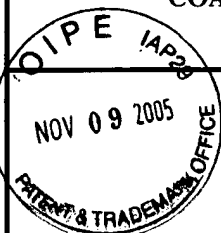

Group Art Unit

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Invention: PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING			
			
I hereby certify that this <u>EP 0 583 205 A1 - 13 Pages</u> (Identify type of correspondence)			
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<div>MARIA T. SANCHEZ (Typed or Printed Name of Person Mailing Correspondence)</div> <div> (Signature of Person Mailing Correspondence)</div>			
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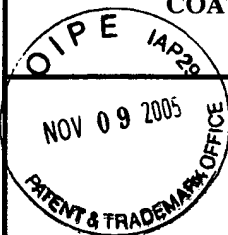
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**Janaury 9, 2002**

Examiner

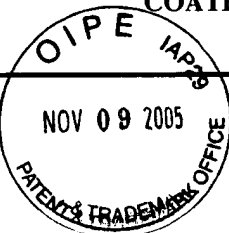

**BARRECA, Nicole M.**

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Serial No. <b>10/047,878</b>	Filing Date <b>Janaury 9, 2002</b>	Examiner <b>BARRECA, Nicole M.</b>	Group Art Unit <b>1756</b>
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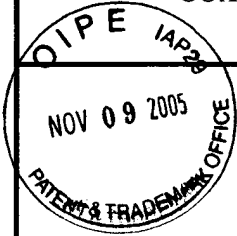
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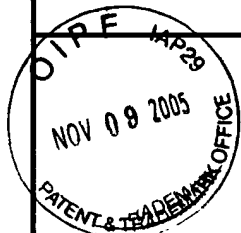
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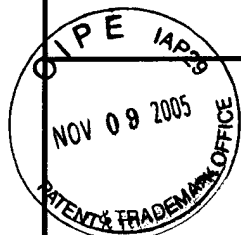
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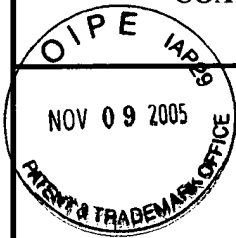
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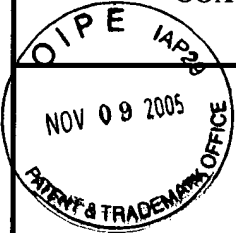
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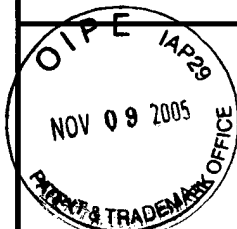
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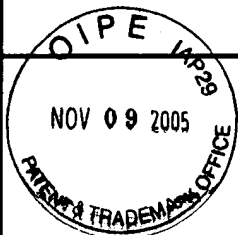
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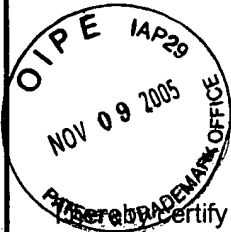
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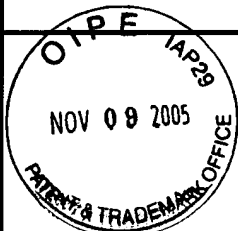
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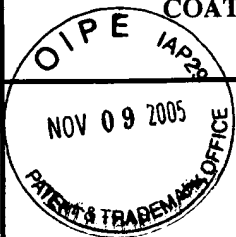
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Group Art Unit

**1756**Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**

Bather et al., "Titanium Nitride Oxide (TiN<sub>x</sub>O<sub>y</sub>) as a Barrier Between Chromium-Silicon-Oxygen (Cr-Si-(O)) and Aluminium Thin Films",  
Thin Solid Films Vol. 200, pages 93 – 116 (1991) - 24 Pages

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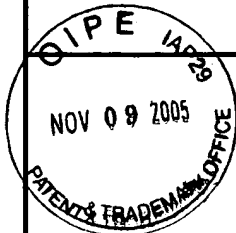
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**1756**Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**Cho et al., "Negative tone 193 nm resists", SPIE Vol. 3999,  
pages 62 – 73 (2000) - 12 Pages

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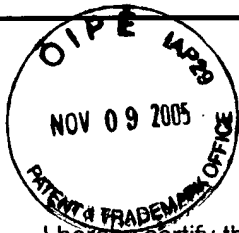
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Group Art Unit

1756

Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**



Choi et al., "Design and Synthesis of New Photoresist Materials for ArF Lithography", SPIE Vol. 3999, pages 54 – 61 (2000) - 8 Pages

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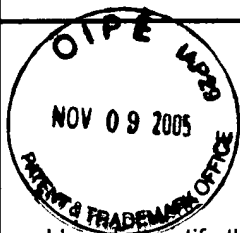
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Choi et al., "Improved Lithographic Performance of 193nm-Photoresists Based on Cycloolefin / Maleic Anhydride Copolymer by Employing Mixed PAGs", SPIE Vol. 4345, pages 94 – 105 (2001) - 12 Pages

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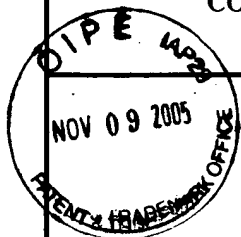
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**1756**Invention: **PROCESS FOR PRODUCING AN IMAGE USING A FIRST MINIMUM BOTTOM ANTIREFLECTIVE COATING**

Czech et al., "Reduction of Linewidth Variation for the Gate Conductor Level by Lithography Based on a New Antireflective Layer",  
Microelectronic Engineering Vol. 21, pages 51 – 56 (1993) - 6 Pages

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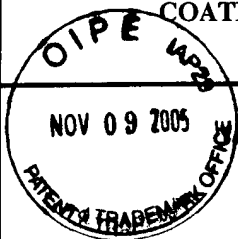
January 9, 2002

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BARRECA, Nicole M.

Group Art Unit

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SPIE Vol. 4345, pages 751 – 760 (2001) - 10 Pages

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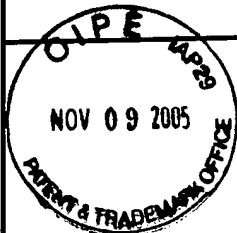
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Houlihan et al., "Chemically Amplified Resists: The Chemistry and Lithographic Characteristics of Nitrobenzyl Benzenesulfonate Derivatives", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 259 – 273 (1990) - 15 Pages

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**2002US304**

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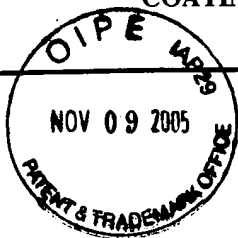
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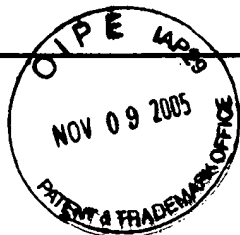
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A Progress Report", SPIE Vol 3999, pages 91 - 101 (2000) - 11 Pages

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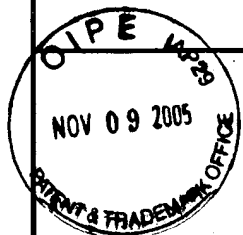
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Schlegel et al., "Studies on the Acid Formation and Deprotection Reaction by Sovel Sulfonates in a Chemical Positive Photoresist", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 281 – 287 (1990) - 7 Pages

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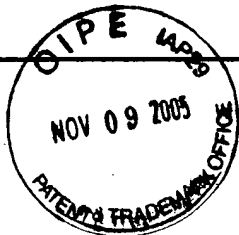
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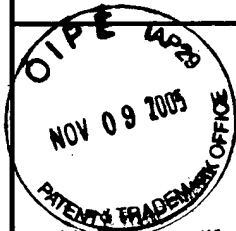
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Yokoyama et al., "Effect of Comonomer Structure on Dissolution Characteristics: ArF Negative Resist System Using Androsterone Derivative with 6-Hydroxy Acid", Journal of Photopolymer Science and Technology Vol. 14, No. 3, pages 393 – 400 (2001) - 8 Pages

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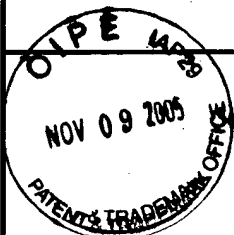
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Yamaoka et al., "Photochemical Dissociation of p-Nitrobenzyl Aromatic Sulfonate and Its Application to Chemical Amplification Resists", Journal of Photopolymer Science and Technology Vol. 3, No. 3, pages 275 – 280 (1990) - 6 Pages

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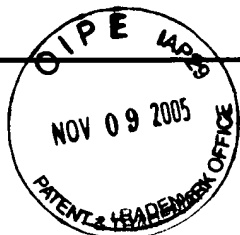
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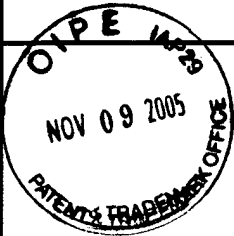
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